IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Andreas Seidel et al.
Serial No.	:	10/627,015
Filed	:	July 25, 2003
For	:	FLAME-RESISTANT POLYCARBONATE MOLDING COMPOSITIONS
Art Unit	:	1614
Examiner	:	Peter A. Szekely

DECLARATION

I, Thomas Eckel, residing at Pfauenstr. 51, 41540 Dormagen, Germany, named as inventor in the above mentioned application, declare as follows:

1) that I have the following technical education and experience:

   a) I am a chemist having studied at the Phillips-Universität of Marburg, Germany, from 1978 to 1987,

   b) I received the degree of doctor rer. nat. at the Phillips-Universität of Marburg in the year of 1987,

   c) I am employed by Bayer AG since July 1987 in the Research Department especially handling polymer blends;

2) that the following tests were carried out under my immediate supervision and control:

Experimental results

Component A3

Linear polycarbonate based on bisphenol A, with a weight average molecular weight (M_w) of 28,000 g/mol (measured by GPC).

Component B5

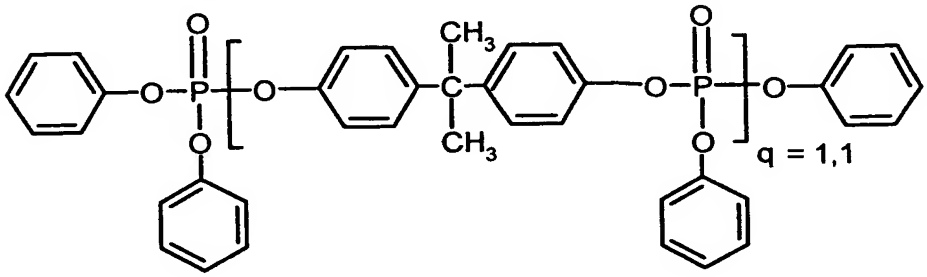
ABS graft polymer produced by mass polymerization with an A/B/S weight ratio of 21%/11%/68% containing SAN with a weight average molecular weight (M_w) of 80,000 g/mol (measured by GPC).

Component B6

ABS graft polymer produced by mass polymerization with an A/B/S weight ratio of 21%/10%/69% SAN with a weight average molecular weight (M_w) of 80,000 g/mol (measured by GPC).

Component C

Bisphenol A-bridged oligophosphate (BDP)



Component D

PTFE preparation consisting of
50 wt.% PTFE and 50 wt.% SAN copolymer.

Component F

Pural® 200: nanoscale basic aluminium oxide hydroxide from Condea (Hamburg, Germany) with an average maximum particle diameter of 50 nm.

Component G

G1: pentaerythritol tetrastearate (PETS)

G2: Phosphite stabilizer

Production and testing of the molding compositions according to the invention

The components are mixed in a twin-screw extruder (ZSK25) from Werner und Pfleiderer, at a mass temperature of 260°C. The molded articles were produced at 240°C melt temperature and a mold temperature of 80°C in an Arburg 270 E injection molding machine.

The notched impact resistance a_k was measured according to ISO 180/1 A.

The flame resistance of the samples was measured according to UL-Subj. 94V on bars measuring 127 x 12.7 x 1.5 mm.

The melt viscosity was measured at 260°C and a shear rate of 1000 s^{-1} according to DIN 54811.

The stress cracking behavior under the influence of chemicals (ESC behavior) was tested on bars measuring 80 mm x 10 mm x 4 mm. A mixture of 60 vol.% toluene and 40 vol.% isopropanol was used as the test medium. The test specimens were pre-strained using an arc-shaped jig (boundary fibre strain ε_x is 3.2%) and stored at 23°C in the test medium. The time to break was measured under these conditions.

The creep behavior (creep resistance) was determined in a tensile test on specimens measuring 70 mm x 40 mm x 10 mm. The bars were subjected to a constant tension of 50 MPa at 23°C and the strain as a function of the time to break was measured. The time to break is a measure of the creep resistance under these conditions.

To determine the weld line strength, the impact strength at the weld line of test specimens measuring 170 mm x 10 mm x 4 mm injected both sides was measured according to ISO 179/1U.

The tensile E modulus and the elongation at break were determined according to DIN EN ISO 527.

A summary of the characteristics of the molding compositions according to the invention is given in Table 1.

The data show that the composition **9** with a butadiene content of 11 wt.-% compared

with the composition C* containing 10 wt.-% result in clear improvements in a_K- and a_n-values, tensile E modulus and elongation at break while maintaining good values of resistance to stress cracking as under the influence of chemicals, melt flowability, creep resistance and flame-resistance.

Table 1: Molding compositions and their characteristics

		9	C*
Components [parts by weight]			
A3	Polycarbonate	70.0	70.0
B5	ABS	15.1	-
B6	ABS	-	15.1
C	BDP	12.5	12.5
D	PTFE preparation	0.8	0.8
F	Nanoscale aluminum oxide hydroxide	0.9	0.9
G1	PETS	0.4	0.4
G2	Phosphite stabilizer	0.1	0.1
Characteristics			
Creep resistance – time to creep failure [h]		20	28
Stress cracking resistance – time to break [min]		8	6
a_k [kJ/m²]		13	11
Flame resistance, UL94V- rating		V-0	V-0
Melt viscosity [Pas]		162	162
a_n (weld line) [kJ/m²]		7,7	6,9
Tensile E modulus [N/mm²]		3006	2946
Elongation at break (RT)		120	78

* Reference example

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Thomas Eckel

Signed at Dormagen, this 7th day of December,2006.